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Study of Recreational Land and Open Space
Using SKYLAB Imagery
Monthly Progress Report, February 1975

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CURRENT ACTIVITY

During February, spectral signatures previously extracted were reviewed to estimate the discriminability of typical scene classes. Additionally, contacts were made with personnel of the Wildlife Division of the Michigan Department of Natural Resources in order to coordinate S-192 data processing efforts with their objectives in managing wildlife habitat in southern Michigan.

Previous conclusions regarding assessments of dynamic range and noise for each SDO noted generally better signal-to-noise ratios for SDO's of the near-IR and mid-IR spectral regions than for SDO's of the visible and thermal spectral regions--a situation primarily caused by the limited dynamic range of the visible and thermal SDO's.

Spectral signatures for known scene classes that represented the range of total scene variability were compared with signal-to-noise determinations in each spectral channel. These signatures represented homogeneous areas of water, dark muck soil, stubble, green sod grass, herbaceous brush, and hardwood forest. Discriminability of scene classes within each channel was much better for the five spectral channels between .68 μm and 1.3 μm than for any others. Discriminability was poorest for the five visible channels from .41 μm to .67 μm . Such observations are in agreement with our expectations of spectral discriminability for these scene classes at the time of year the data were acquired and clearly illustrate the advantage of having several spectral bandwidths in the near-infrared region. Subsequent processing will quantify scene class discriminability on the basis of band-to-band statistical variations.

The ultimate objective of this project is to demonstrate the utility of S-192 and other types of SKYLAB data for the analysis of recreational sites in southern Michigan. A major form of outdoor recreation in southern Michigan consists of hunting, with much of this type of activity taking place in

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managed state game areas. Personnel of the Wildlife Division of the Michigan Department of Natural Resources (DNR) have shown genuine interest in our remote sensing work during previous contacts. We believe that their participation in the present project will contribute to the significance and usefulness of the results achieved. Accordingly, we visited the Wildlife Division on 21 February to discuss our program and ask for their advice and assistance in obtaining ground truth and reviewing project results. Our primary contact was with Gary Boushelle, Assistant Regional Wildlife Biologist, Region III (Southern Michigan). Also present at the meeting were John Byelich, Deer Range Management Specialist and L. A. Davenport, Senior Wildlife Executive.

This discussion indicated that a state game area in Gratiot and Saginaw Counties is of particular interest to the Wildlife Division and is included in the coverage of the S-192 pass of 5 August 1973. The Gratiot-Saginaw State Game Area consists of a total of 13,097 acres. It is managed mainly for woodland species of wildlife such as deer, ruffed grouse, woodcocks, and squirrels. Habitat management includes wildlife cuttings and plantings. Commercial cuttings are also made, usually as clearcuts for aspen reproduction. Some areas are sharecropped, but the soil is sandy and not very productive. Better than half the area is timber, consisting of even-aged oak, oak-aspen, aspen, and mixed hardwoods stands. Only a small amount of conifer is present.

FUTURE WORK

As the next step in analysis of S-192 data, greymaps will be prepared for the Gratiot-Saginaw State Game Area and further discussions held with Gary Boushelle to define management objectives in the area and types of information needed on significant classes of vegetation and terrain to meet these objectives. Once training sets have been selected for each of these classes, spectral signature data will be analyzed to determine the degree to which these significant classes can be discriminated.

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